In the Drawings:

Replacement sheets are submitted for Sheets 1~38 of the drawings. These replacement sheets are submitted in view of informalities being eliminated in Figures 1~26. Each replacement sheet includes all of the figures appearing on the immediately prior version of that drawing sheet, and thus, as corrected, replaces that immediately prior version.

Remarks: General

The claims have been amended by rewriting Claims 11, 17, 37, 43, 49, 65 and 83 to cover, respectively, more particularized embodiments of this invention; and by rewriting Claims 1, 7~10, 42, 44~48, 50~64, 66~82 and 84~88 to correct typographical errors or matters of form. In addition, Claims 16 and 38 have been canceled without prejudice to or disclaimer of the subject matter thereof.

No new matter is added by the amendments to Claims 11, 17, 37, 43, 49, 65 and 83. Although various words, phrases and/or textual passages that may not have been present in the claims as originally filed have been added by amendment to those claims, basis in the specification for those words, phrases and textual passages is as follows:

in Claim 11, support for the recitation as to isolation of chambers may be found in Claim 16, which has been cancelled;

in Claim 17, support for the recitation as to covering may be found on page 18 at lines 19~23;

in Claim 37, support for the recitation as to sliding components may be found in Claim 38, which has been cancelled;

in Claims 43 and 49, support for the recitation as to a slidable fluid distribution piece may be found on page 11 at lines 15~16;

in Claim 65, support for the recitation as to a positioning system may be found on page 2 at lines 2~22; and

in Claim 83, support for the recitation as to a slidable cover may be found on page 11 at lines 15~16.

The amendments to Claims 1, 7~10, 42, 44~48, 50~64, 66~82 and 84~88 are not related to patentability inasmuch as they are made solely for the purpose of correcting typographical errors or are made as to matters of form.

Informalities have been eliminated from Figures 1~26, and clean versions of those drawings are consequently submitted.

A petition under 37 CFR §1.136 for a three-month extension of time to respond to the Examiner's action is enclosed, the

fee for which should be charged to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

By Applicant's calculation, no fee is due by reason of this amendment to the claims. If any fee other than or in addition to that mentioned specifically above is required to authorize or obtain consideration of this response, please charge such fee to Deposit Account No. 04-1928.

Claims 1~15, 17~37 and 39~88 are now active in the application. Applicant hereby requests reconsideration and further examination of the application in view of the reasons it has set forth below for allowance of the claims.

Remarks: Detailed Action

I.

In Item 1, the Examiner has objected to the disclosure because of the inclusion of a claim to priority in the specification. The first sentence of the disclosure has been included to incorporate the priority application by reference in addition to claim the benefit of that application, and thus is not viewed as prohibited by the MPEP.

In Item 1, the Examiner has also objected to the disclosure because no Claim 42 was submitted, and the claims are consequently misnumbered. Misnumbered Claims 43~89 have been renumbered by claim amendment.

In view of the foregoing, Applicant respectfully requests that the Examiner withdraw these objections to the disclosure.

II.

In Item 2, the Examiner has objected to the claims because no Claim 42 was submitted, and the claims are consequently misnumbered. As misnumbered Claims 43~89 have been renumbered by claim amendment, Applicant respectfully requests that the Examiner withdraw this objection to the claims.

III.

In Item 3, the Examiner has rejected Claims 1~5, 11, 13~15, 17~20, 37, 39~41, 43, 49, 51~54, 65~68, 83 and 85~88 under 35 U.S.C. §102 as being anticipated by US 6,962,644 ("Paterson"). The Examiner has also objected to Claims 6~10, 12, 16, 21, 38, 42, 50 and 84.

Claim 1 requires for the apparatus as described therein the presence together of

a generally cylindrical reactor housing having a bore and a central axis, and

a reaction assembly, contained within the reactor housing, and movable in the housing bore in a direction along the axis of the housing.

The reaction assembly in turn requires the presence together of

a cylindrical outer body having a bore,

a cylindrical inner body contained within the bore of the outer body, and having a sample holder receivable within the bore of the inner body.

It is also required, however, that the reaction assembly is movable between the loading/unloading section, the reaction section, and the analytical monitoring system, so that the reaction assembly is positioned to each of a plurality of predetermined monitoring positions, such that at least one of the reaction wells is aligned with the at least one analytical port at each of the plurality of monitoring positions.

Paterson discloses a tandem processing chamber 106, within which is a first tandem process chamber 200, within which is a chamber liner 255, within which is a wafer support 208. Paterson does not teach or suggest Claim 1 because if the combination of the tandem process chamber 200, the chamber liner 255, and the wafer support 208 is viewed as the reaction assembly, that assembly is not movable to be positioned at a plurality of predetermined monitoring positions. If the wafer support 208 is viewed as the reaction assembly, it does not itself contain an outer body, an inner body and a sample holder wherein each of the plurality of reaction wells in the sample holder is aligned with each of the plurality of ports of the inner body.

Similarly Paterson does not teach or suggest Claim 10 because there is no disclosure therein of inserting and removing a sample holder [steps (a) and (k), respectively] wherein the sample holder is part of a reaction assembly that is sequentially positioned at a plurality of monitoring positions [step (f)].

In view of the distinctions between the subject matter of Claims 1 and 10 and Paterson as discussed above, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 1~5 under 35 U.S.C. §102, and the objection to Claims 6~10.

It is submitted that the addition of the features recited in amended Claims 11, 17, 37, 49, 65 and 83 distinguishes those claims from Paterson inasmuch as none of those features are taught or suggested therein. Applicant therefore respectfully requests that the Examiner withdraw the rejection of those claims under 35 U.S.C.

§102, and also withdraw the rejection of, or the objection to, any of the respective claims dependent thereon.

In view of the foregoing, Applicant submits that all of the Examiner's objections and rejections have been properly traversed, and that the pending claims are in condition for allowance, request for which is hereby respectfully made.

Respectfully submitted,

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I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office on June 1, 2006.

Date: June 1, 2006

John A. Langworthy

Appendix A

(i) Amendments
in marked-up form to
Claims 1, 8~11, 17, 37 and 42~88; and

(ii) Status of all pending claims
(1~15, 17~37 and 39~88)

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1. (currently amended) A computer-controlled reaction apparatus for simultaneously conducting chemical reactions on a plurality of samples by maintaining the samples in chemical isolation from each other and subjecting each of the samples to substantially identical conditions, comprising:

(a) a generally cylindrical reactor housing having a bore and a central axis, the housing comprised of:

i) a loading/unloading section having an airlock;

ii) a reaction section;

iii) an analytical monitoring system;

iv) a drive section;

v) a distribution manifold system;

(b) a gas-distribution and pressure control system in communication with the reactor housing;

(c) a positioning system connected to the drive section;

(d) a temperature control system for controlling the temperature of the reactor housing;

(e) a reaction assembly, contained within the reactor housing, and movable in the housing bore in a direction along the axis of the housing, the reaction assembly comprising:

i) a cylindrical outer body having a bore, a plurality of ports and a fluid distribution manifold;

ii) a cylindrical inner body contained within the bore of the outer body and having:

A) a bore and a plurality of ports, and

B) a sample holder containing a plurality of sample holding positions for containing the samples to be reacted,

the sample holder being receivable within the bore of inner body and movable along the axis to a fully-inserted position, wherein, when the sample holder is in the fully-inserted position within the inner body, each of the plurality of reaction wells is aligned with each of the plurality of ports of the inner body;

(f) an analytical monitoring system comprising:

at least one optical port and at least one optical arrangement, comprising a paired source and detector, the at least one optical arrangement being capable of performing a measurement, at one or more ultraviolet, visible or infrared wavelengths, of a sample contained at a sample holding position to characterize the sample;

(g) a computer controller, connected to the gas-distribution and pressure control system, the positioning system, the temperature control system, and the analytical monitoring system;

wherein the reaction assembly is movable between the loading/unloading section, the reaction section, and the analytical monitoring system; and

wherein the drive section mechanically links the reaction assembly to the positioning system, so that the reac~~tor~~ion assembly is positioned to each of a plurality of predetermined monitoring positions, such that at least one of the reaction wells is aligned with the at least one analytical port at each of the plurality of monitoring positions.

2. (original) The apparatus of claim 1 wherein the computer controller comprises a central processor, connected by a data bus to a random access memory (RAM), a data storage device, an interface subsystem and a display device, the central processor being controlled by an operating system and application software stored in the data storage device, the central processor controlling the interface subsystem which is connected to, and controls, the gas-distribution and pressure control system, the positioning system, the temperature control system, and the optical monitoring system.

3. (original) The apparatus of claim 1 wherein the gas-distribution and pressure control system comprises a supply of one or more gases, one or more valves and associated flow measuring devices

and pressure regulators for controlling the flow of gas to the reaction assembly.

4. (original) The apparatus of claim 1, wherein the temperature control system comprises one or more heating elements, one or more temperature sensors and a control unit, the control unit being electrically connected to the interface subsystem of the computer controller for receiving a temperature control signal and being connected to the one of more sensors for receiving temperature signals and being connected to the one of more heating elements for controlling electrical current to said heating elements.

5. (original) The apparatus of claim 1 wherein the optical ports of the optical monitoring system are positioned in a coplanar arrangement so that an optical arrangement, comprising one or more ports, a optical source and an optical detector may be selected from a plurality of optical arrangements for characterizing each sample.

6. (original) The apparatus of claim 1 wherein the optical monitoring system comprises a spectrophotometer.

7. (currently amended) The apparatus of claim 1 wherein the optical arrangement comprises a transmission arrangement, wherein light is transmitted through ~~the~~ thin film samples.

8. (currently amended) The apparatus of claim 1 wherein the optical arrangement comprises a reflection arrangement, wherein light is reflected from at least one surface of ~~the~~ thin film samples.

9. (currently amended) The apparatus of claim 1 wherein the optical arrangement comprises an attenuated total reflection arrangement, wherein light is repeatedly reflected from a surface of ~~the~~ thin film samples.

10. (currently amended) A method of performing a plurality of chemical reactions using the apparatus of Claim 1, comprising the steps of:

(a) positioning the reactorion assembly at an initial undocked position in the loading/unloading section, loading the sample holder with samples to be reacted and inserting the sample holder into the inner body of the reacte~~r~~ion assembly and closing the airlock,

(b) moving the inner body of the reactor assembly to a docked position within the outer body,

(c) causing the temperature control system to bring the reactor assembly to a predetermined temperature,

(d) causing the fluid distribution and pressure control system to introduce one or more reactant fluids at a predetermined flow rate and pressure to the samples within the sample holding positions,

(e) maintaining the fluid flow and pressure for a predetermined time so that a reaction occurs between the reactant fluids and the samples,

(f) sequentially positioning the reactorion assembly so that each of the sample positions is aligned at each of the plurality of monitoring positions,

(g) performing at least one optical measurement to characterize each sample,

(h) returning the reactorion assembly to the initial position in the loading/unloading section,

(i) quenching the reaction by stopping the flow of reactant fluids and initiating a flow of quenching gas to return the temperature and pressure of the reaction assembly to ambient,

(j) moving the inner body of the reactor assembly to the undocked position, and

(k) opening the airlock and removing the sample holder from the reactor assembly.

11. (currently amended) A method for testing a plurality of samples, comprising (a) simultaneously reacting all samples with a fluid in a first chamber, and (b) during the reaction of the samples with the fluid, subjecting each sample in sequence to analysis in a second chamber; wherein the first chamber is isolated from the second chamber.

12. (original) The method of Claim 11 wherein the reaction of the samples with the fluid and the analysis are performed in a sealed vessel, and the method further comprises, while the samples remain in the sealed vessel, subjecting one or more of them to a second simultaneous reaction with a fluid, and a second analysis.

13. (original) A method according to Claim 11 wherein the analysis is optical analysis.

14. (original) A method according to Claim 11 wherein the analysis is selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

15. (original) A method according to Claim 11 wherein each sample is reacted with the fluid in a chamber in which the temperature or the pressure is controlled.

16. (canceled).

17. (currently amended) A method for testing a plurality of samples, comprising (a) simultaneously covering all samples in a sealed vessel, (b) simultaneously reacting all samples with a fluid ~~in a sealed vessel~~, and (b) after completion of the reaction of the samples with the fluid, subjecting each sample in sequence to analysis in the sealed vessel.

18. (original) A method according to Claim 17 wherein the analysis is optical analysis.

19. (original) A method according to Claim 17 wherein the analysis is selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

20. (original) A method according to Claim 17 wherein each sample is reacted with the fluid in a chamber in which the temperature or the pressure is controlled.

21. (original) A method according to Claim 17 wherein each sample is reacted with the fluid in a first chamber, and each sample is subjected to analysis in a second chamber, and the first chamber is isolated from the second chamber.

22. (original) A method for testing a group of samples, comprising (a) simultaneously reacting all samples with a fluid in a sealed vessel, (b) before or after step (a), simultaneously reacting one or more members of a subgroup of the group of samples with a fluid in the sealed vessel, and (c) subjecting each sample to analysis.

23. (original) A method according to Claim 22 wherein the analysis is optical analysis.

24. (original) A method according to Claim 22 wherein the analysis is selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

25. (original) A method according to Claim 22 wherein each of the samples, or each of the members of the subgroup of samples, is reacted with the fluid in a chamber in which the temperature or the pressure is controlled.

26. (original) A method according to Claim 22 wherein each sample is reacted with the fluid in a first chamber, and each sample is subjected to analysis in a second chamber, and the first chamber is isolated from the second chamber.

27. (original) A method for testing a plurality of samples, comprising (a) bringing all samples to a predetermined temperature in a first chamber of a vessel, (b) simultaneously exposing each sample in a second chamber of the vessel, which is isolated from the first chamber, to a reactive fluid, and (c) subjecting each sample to analysis.

28. (original) A method according to Claim 27 further comprising a step, after completion of analysis, of changing in the first chamber the temperature of all samples to a temperature above or below the predetermined temperature.

29. (original) A method according to Claim 27 wherein the analysis is optical analysis.

30. (original) A method according to Claim 27 wherein the analysis is selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

31. (original) A method according to Claim 27 wherein each sample is subjected to analysis in a third chamber, and the third chamber is isolated from the first and second chambers.

32. (original) A method for testing a plurality of samples, comprising (a) simultaneously exposing all samples to a non-reactive fluid in a first chamber of a vessel, (b) simultaneously exposing all samples in a second chamber of the vessel, which is isolated from the first chamber, to a reactive fluid, and (c) subjecting each sample to analysis.

33. (original) A method according to Claim 32 wherein the analysis is optical analysis.

34. (original) A method according to Claim 32 wherein the analysis is selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

35. (original) A method according to Claim 32 wherein each sample is exposed to the reactive fluid in a chamber in which the temperature or the pressure is controlled.

36. (original) A method according to Claim 32 wherein each sample is subjected to analysis in a third chamber, and the third chamber is isolated from the first and second chambers.

37. (currently amended) A method for testing a group of samples in a sealed vessel, comprising (a) placing one or more members of the group of samples in a position in the vessel to receive separate exposure to a reactive fluid, (b) sliding one component of the sealed vessel relative to another component of the sealed vessel to simultaneously exposinge those samples to the fluid, and (c)

subjecting in the sealed vessel each member of the group of samples to analysis.

38. (cancelled).

39. (original) A method according to Claim 37 wherein the analysis is optical analysis.

40. (original) A method according to Claim 37 wherein the analysis is selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

41. (original) A method according to Claim 37 wherein each sample is exposed to the reactive fluid in a chamber in which the temperature or the pressure is controlled.

432. (currently amended) A method according to Claim 37 wherein each sample is exposed to the reactive fluid in a first chamber, and each sample is subjected to analysis in a second chamber, and the first chamber is isolated from the second chamber.

443. (currently amended) An apparatus for testing a group of samples, comprising (a) a fluid distribution ~~system~~ piece to simultaneously expose each sample to a reactive fluid, and (b) a holder for the group of samples ~~slidable with respect to the fluid distribution system~~, and (c) an analyzer, wherein the fluid distribution piece is slidable with respect to the holder.

454. (currently amended) An apparatus according to Claim 443 further comprising a fluid distribution system to simultaneously expose only the members of a subgroup of the group of samples to a reactive fluid.

465. (currently amended) An apparatus according to Claim 443 wherein the analyzer performs optical analysis.

476. (currently amended) An apparatus according to Claim 443 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

487. (currently amended) An apparatus according to Claim 443 wherein the temperature or the pressure is controlle0 in the reaction chamber in which each sample is reacted with the fluid.

498. (currently amended) An apparatus according to Claim 443 wherein the fluid distribution system is isolated from the analyzer.

5049. (currently amended) An apparatus for testing a group of samples, comprising (a) a fluid distribution ~~system~~ piece to simultaneously expose each sample to a reactive fluid, (b) an analyzer, and (c) a holder for the group of samples, wherein the fluid distribution piece is slidable with respect to the analyzer.

510. (currently amended) An apparatus according to Claim 5049 further comprising a fluid distribution system to simultaneously

expose only the members of a subgroup of the group of samples to a reactive fluid.

521. (currently amended) An apparatus according to Claim 5049 wherein the analyzer performs optical analysis.

532. (currently amended) An apparatus according to Claim 5049 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

543. (currently amended) An apparatus according to Claim 5049 further comprising a chamber in which the temperature or the pressure is controlled of each sample is controlled.

554. (currently amended) An apparatus according to Claim 5049 wherein the fluid distribution system is isolated from the analyzer.

565. (currently amended) An apparatus for testing a group of samples, comprising (a) a fluid distribution system to simultaneously expose only the members of a subgroup of the group of samples to a reactive fluid, and (b) a holder for the group of samples slidable with respect to the fluid distribution system, and (c) an analyzer.

576. (currently amended) An apparatus according to Claim 565 wherein the analyzer performs optical analysis.

587. (currently amended) An apparatus according to Claim 565 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

598. (currently amended) An apparatus according to Claim 565 wherein the temperature or the pressure is controlled in the chamber in which the member of the subgroup of samples are exposed with the fluid.

6059. (currently amended) An apparatus according to Claim 565 wherein the fluid distribution system is isolated from the analyzer.

610. (currently amended) An apparatus for testing a group of samples, comprising (a) a fluid distribution system to simultaneously expose only the members of a subgroup of the group of samples to a reactive fluid, (b) an analyzer, and (c) a holder for the group of samples slidable with respect to the analyzer.

621. (currently amended) An apparatus according to Claim 610 wherein the analyzer performs optical analysis.

632. (currently amended) An apparatus according to Claim 610 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

643. (currently amended) An apparatus according to Claim 6~~1~~0 further comprising a chamber in which the temperature or the pressure of each member of the subgroup of samples is controlled.

654. (currently amended) An apparatus according to Claim 6~~1~~0 wherein the fluid distribution system is isolated from the analyzer.

6~~6~~5. (currently amended) A sealed vessel for testing a plurality of samples, comprising (a) a fluid distribution system to simultaneously expose the samples to a reactive fluid, ~~and~~ (b) an analyzer ~~in the sealed vessel~~ that is isolated from the fluid distribution system, and (c) a positioning system to position each sample in proximity to the analyzer for separate analysis in isolation from each other sample.

6~~7~~6. (currently amended) An apparatus according to Claim 6~~6~~5 wherein the analyzer performs optical analysis.

687. (currently amended) An apparatus according to Claim 6~~6~~5 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

698. (currently amended) An apparatus according to Claim 6~~6~~5 wherein the temperature or the pressure is controlled in the chamber in which each sample is exposed to the fluid.

~~70~~69. (currently amended) An apparatus for testing a plurality of samples, comprising (a) a first chamber in which each samples is simultaneously exposed to a non-reactive fluid, (b) a second chamber, isolated from the first chamber, in which each samples is simultaneously exposed to a reactive fluid, and (c) an analyzer.

71~~0~~. (currently amended) An apparatus according to Claim ~~70~~69 wherein the analyzer performs optical analysis.

72~~1~~. (currently amended) An apparatus according to Claim ~~70~~69 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

73~~2~~. (currently amended) An apparatus according to Claim ~~70~~69 wherein the fluid distribution system is isolated from the analyzer.

743. (currently amended) An apparatus for testing a plurality of samples, comprising (a) a first chamber in which each samples is simultaneously brought to a pre-determined temperature, (b) a second chamber, isolated from the first chamber, in which each samples is simultaneously exposed to a reactive fluid, and (c) an analyzer.

75~~4~~. (currently amended) An apparatus according to Claim 743 wherein the analyzer performs optical analysis.

765. (currently amended) An apparatus according to Claim 743 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

776. (currently amended) An apparatus according to Claim 743 further comprising a fluid distribution system that is isolated from the analyzer.

787. (currently amended) An apparatus for testing a plurality of samples, comprising (a) a holder for the samples, (b) a cover for the holder, and (c) an analyzer, wherein the cover is slidable with respect to the holder, and the holder is slidable with respect to the analyzer.

798. (currently amended) An apparatus according to Claim 787 further comprising a fluid distribution system to simultaneously expose the samples to a reactive fluid.

8079. (currently amended) An apparatus according to Claim 787 wherein the analyzer performs optical analysis.

810. (currently amended) An apparatus according to Claim 787 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

821. (currently amended) An apparatus according to Claim 787 further comprising a chamber in which the temperature or the pressure is controlled in which each sample is reacted with a fluid.

832. (currently amended) An apparatus according to Claim 798 further comprising a fluid distribution system that is isolated from the analyzer.

843. (currently amended) An apparatus for testing a group of samples, comprising (a) a fluid distribution system to simultaneously expose each sample to a reactive fluid; (b) a reaction chamber in which each sample is reacted with the fluid, the reaction chamber for each sample being separate and isolated from the reaction chamber for each other sample; (c) a slidable cover for each reaction chamber; and (ed) an analyzer.

854. (currently amended) An apparatus according to Claim 843 further comprising a fluid distribution system to simultaneously expose only the members of a subgroup of the group of samples to a reactive fluid.

865. (currently amended) An apparatus according to Claim 843 wherein the analyzer performs optical analysis.

876. (currently amended) An apparatus according to Claim 843 wherein the analyzer performs a method of analysis selected from the group consisting of ultrasonic, electrostatic, magnetic, radio frequency or x-ray analysis.

887. (currently amended) An apparatus according to Claim 843 wherein the temperature or the pressure is controlled in the reaction chamber in which each sample is reacted with the fluid.

898. (currently amended) An apparatus according to Claim 843 wherein the fluid distribution system is isolated from the analyzer.